

Appl. No. 09/804,034
Response to Final Action of January 15, 2005

PATENT
Docket No.: US010383
Customer No. 000024737

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-2. (cancelled)

3. (currently amended) A process for automatically updating data elements in a form document being used by a first software application, the process comprising:

accessing data elements stored in a common database that correspond to the form document being used by the first software application, wherein the data elements of the database can be common to one or more form documents of one or more software applications having access to the common database, further wherein each data element includes at least a field and data in the field;

inputting the accessed data elements into the form document, wherein the first software application is responsive to a first user input for making changes to the accessed data elements within the form document;

using the first software application for making changes to the inputted accessed data elements within the form document in response to input by the first user;

monitoring the common database to detect changes to the accessed data elements that may have been changed by the first software application or a second software application of the one or more software applications in response to input of a second user while the form document is being used by the first software application in response to input by the first user; and

updating the accessed data elements in the form document while the form document is being used by the first software application in response to input of the first user, wherein the updating occurs in accordance with rules corresponding to the

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detected changes, further wherein the monitoring of the common database and the updating of the data elements in the form document comprise (i) a program segment of the first software application or (ii) a software process implemented as a thread executing in a multi-tasking operating system environment, wherein the program segment or software process implemented as a thread (a) periodically checks the common database for available updates to the accessed data elements, (b) retrieves new records from the common database in response to an availability of updates, the new records corresponding to the accessed data elements that have changed, and (c) processes the new records corresponding to the changed data elements as an array of new records for updating the accessed data elements in the form document while the form document is being used by the first software application and the first user, further wherein processing the array of new records includes adding new records to the array of new records or deleting new records from the array of new records in response to one or more comparisons against old records of the form document, the old records corresponding to records existing as of a last time the accessed data elements of the form document were updated or as of a time the form document was opened, the adding or deleting to the array of new records further being in accordance with the rules corresponding to the detected changes, wherein the rules are based upon

(I) a characteristic of the change to the accessed data elements by a second user, wherein the characteristic of the change comprises the accessed data elements having been electronically signed by the second user in which the electronically signed data elements require a password to edit the corresponding data elements, and

(II) a characteristic of the accessed data elements used by the first user, wherein the characteristic of the accessed data elements comprises

(i) a change to a field of the accessed data elements while the form document has remained open by the first user,
(ii) fields of the accessed data elements having been updated from

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the common database while the form document has remained open by the first user.

(iii) fields of the accessed data elements that have not changed since the form document was opened by the first user, and

(iv) the accessed data elements having been electronically signed by the first user in which the electronically signed data elements require a password to edit the corresponding data elements.

4. (previously presented) The process according to claim 3, further comprising: displaying an update status of the accessed data elements in accordance with the updating;

validating present and past changes to the accessed data elements of the form document; and

storing the validated present and past changes to the accessed data elements in the common database.

5. (currently amended) A device for automatically updating data elements in a form document being used by a first software application comprising:

a processor; and

computer readable media encoded with processing instructions for execution by the processor, the processing instructions including instructions:

to access data elements stored in a common database that correspond to the form document being used by the first software application, wherein the data elements of the database can be common to one or more form documents of one or more software applications having access to the common database, further wherein each data element includes at least a field and data in the field,

to input the accessed data into the form document, wherein the first software application is responsive to a first user input for making changes to the accessed data

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elements within the form document,

to use the first software application for making changes to the inputted accessed data elements within the form document in response to input by the first user,

to monitor the common database to detect changes to the accessed data elements that may have changed by the first software application or a second software application or the one or more software applications in response to input of a second user while the form document is being used by the first software application in response to input by the first user, and

to update the accessed data elements in the form document while the form document is being used by the first software application in response to input of the first user, wherein the updating occurs in accordance with rules corresponding to the detected changes, further wherein the computer readable media further comprises (i) a program segment of the first software application or (ii) a software process implemented as a thread executing in a multi-tasking operating system environment, wherein the program segment or software process implemented as a thread (a) periodically checks the common database for available updates to the accessed data elements, (b) retrieves new records from the common database in response to an availability of updates, the new records corresponding to the accessed data elements that have changed, and (c) processes the new records corresponding to the changed data elements as an array of new records for updating the accessed data elements in the form document while the form document is being used by the first software application and the first user, further wherein processing the array of new records includes adding new records to the array of new records or deleting new records from the array of new records in response to one or more comparisons against old records of the form document, the old records corresponding to records existing as of a last time the accessed data elements of the form document were updated or as of a time the form document was opened, the adding or deleting to the array of new records further being in accordance with the rules corresponding to the detected changes.

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wherein the rules are based upon

- (I) a characteristic of the change to the accessed data elements by a second user, wherein the characteristic of the change comprises the accessed data elements having been electronically signed by the second user in which the electronically signed data elements require a password to edit the corresponding data elements, and
- (II) a characteristic of the accessed data elements used by the first user, wherein the characteristic of the accessed data elements comprises
 - (i) a change to a field of the accessed data elements while the form document has remained open by the first user,
 - (ii) fields of the accessed data elements having been updated from the common database while the form document has remained open by the first user,
 - (iii) fields of the accessed data elements that have not changed since the form document was opened by the first user, and
 - (iv) the accessed data elements having been electronically signed by the first user in which the electronically signed data elements require a password to edit the corresponding data elements.

6. (currently amended) The device according to claim 5, further wherein the rules synchronize simultaneous changes made to the accessed data elements.

7 - 8. (canceled).

9. (previously presented) The device according to claim 5, wherein the computer readable media is further encoded with processing instructions so that the processor provides update notification to the first user while the form document is being used by the first user.

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10. (previously presented) The device according to claim 9, wherein the update notification comprises displaying update history information corresponding to each accessed data element in the form document.

11. (currently amended) The device according to claim 10, wherein the update notification includes displaying the accessed data element elements in different colors in accordance with the updating.

12 - 16. (canceled).

17. (currently amended) A computer readable medium encoded with processing instructions for implementing a method of automatically updating data elements in a form document and to be performed by a computer, the method comprising:

accessing data elements stored in a common database that correspond to the form document, wherein the data elements of the database can be common to one or more form documents of one or more software applications having access to the common database, further wherein each data element includes at least a field and data in the field;

inputting the accessed data elements into the form document;

using the form document, wherein changes can be made to the inputted accessed data elements within the form document in response to input by a first user;

monitoring the common database to detect changes to the accessed data elements that may have changed by the one or more software applications in response to input of a second user while the form document is being used by the first user; and

updating the accessed data elements in the form document while the form document is being used by the first user, wherein the updating occurs in accordance with rules corresponding to the detected changes, further wherein monitoring of the

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common database and the updating of the data elements in the form document comprises (a) periodically checking the common database for available updates to the accessed data elements, (b) retrieving new records from the common database in response to an availability of updates, the new records corresponding to the accessed data elements that have changed, and (c) processing the new records corresponding to the changed data elements as an array of new records for updating the accessed data elements in the form document while the form document is being used by the first user, further wherein processing the array of new records includes adding new records to the array of new records or deleting new records from the array of new records in response to one or more comparisons against old records of the form document, the old records corresponding to records existing as of a last time the accessed data elements of the form document were updated or as of a time the form document was opened, the adding or deleting to the array of new records further being in accordance with the rules corresponding to the detected changes, wherein the rules are based upon

(I) a characteristic of the change to the accessed data elements by a second user, wherein the characteristic of the change comprises the accessed data elements having been electronically signed by the second user in which the electronically signed data elements require a password to edit the corresponding data elements, and

(II) a characteristic of the accessed data elements used by the first user, wherein the characteristic of the accessed data elements comprises

(i) a change to a field of the accessed data elements while the form document has remained open by the first user,

(ii) fields of the accessed data elements having been updated from the common database while the form document has remained open by the first user,

(iii) fields of the accessed data elements that have not changed since the form document was opened by the first user, and

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(iv) the accessed data elements having been electronically signed
by the first user in which the electronically signed data elements require a
password to edit the corresponding data elements.